

REMARKS

Claims 2, 5, 7-10, 15, 18, 20-22, 27-41 and 44-50 are pending in this application, of which claims 2, 5, 7, 15, 18, 20, 21, 44, 45 and 46 have been amended. Claims 11-13 have been cancelled. No new claims have been added.

The Examiner has objected to the drawings for informalities which have been corrected in the attached print of Fig. 84A. If approved, these corrections will be incorporated into formal drawings to be filed prior to payment of the Issue Fee.

The Examiner has objected to claims 2, 5, 7-9, 15, 18, 20-22 and 44-50 under 37 CFR §1.75(c) for being in improper dependent form, and more specifically, for depending from a cancelled base claim.

Accordingly, claims 2, 5, 7, 15, 18, 20, 21, 44, 45 and 46 have been amended by rewriting them in independent form.

Before turning to the cited references, a brief review of the claimed invention is in order.

Claim 10 of the present invention recites a structure an example of which is disclosed in Fig. 71. As set forth in claim 10, the device of the present invention has the connecting parts projecting from the first resin portion. Further, the connecting part thus projecting from the first resin portion is covered with a metallic film.

Claims 10 and 34-36 stand rejected under 35 USC §102(b) as anticipated by JP-59 257814 to Takashi (hereinafter "**Takashi**").

Applicants respectfully traverse this rejection.

Takashi discloses a resin mold semiconductor device in which a semiconductor chip 4 is

bonded to an insulating part 5 on a metallic part 2' by an adhesive. The electrodes of the chip 4 and metallic parts 1' exposed in the openings arranged on the insulating part 5 are connected by wires

7. The chip 4 and the exposed metallic parts 1' are sealed with a resin 3.

Contrary to the present invention, Takahashi fails to disclose that connecting parts project from the bottom part of the package body. Fig. 1 of Takahashi, shows a flat metal film ("metallic port") 1' provided at the bottom part of the package body. This flat metal film 1' cannot be regarded as corresponding to the connecting part claimed in the instant application, because it lacks a metal film covering thereon. If, on the other hand, the flat metal film 1' is regarded as corresponding to the metal film recited in claim 10 the structure of Takahashi lacks the connection part projecting from the package body, as required in claim 10 of the instant application.

Regarding claim 34, Takahashi fails to show an electrode which forms a flush surface with the package body. In Takahashi, the electrode is provided on the bottom surface of the package body.

Thus, the 35 USC §102(b) rejection should be withdrawn.

Claims 37 and 38 under 35 USC §103(a) as unpatentable over Takashi in view of U.S. Patent 5,631,499 to Hosomi et al. (hereinafter "Hosomi et al.").

Applicants respectfully traverse this rejection.

Hosomi et al. has been cited for teaching the formation of metallic films 3 comprising a plurality of stacked metallic layers but, like Takashi discussed above, fails to teach, mention or suggest the electrode forming a flush surface with the package body, as recited in claim 34, from

U.S. Patent Application Serial No. 09/442,038

which these claims depend.

Thus, the 35 USC §103(a) rejection should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 2, 5, 7-10, 15, 18, 20-22, 27-41 and 45-50, as amended, are in condition for allowance, which action, at an early date, is requested.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 09/442,038

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,
McLELAND & NAUGHTON, LLP



William L. Brooks
Attorney for Applicants
Reg. No. 34,129

Atty. Docket No. 960942A
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
Tel: (202) 659-2930
WLB:mla

Enclosures: Version With Markings To Show Changes Made
Substitute Abstract
Petition for Extension of Time
Amendment Transmittal

H:\HOME\letitia\WLB\96\960942a\amendment

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Abstract:

The Abstract has been amended as follows:

A device [includes] including a chip, and a resin package sealing the chip, the resin package having resin projections located on a mount-side surface of the resin package. Metallic films are respectively provided to the resin projections. Connecting parts electrically connect electrode pads of the chip and the metallic film.

In the Claims:

Claims 11-13 have been canceled.

Claims 2, 5, 7, 15, 18, 20, 21, 44, 45 and 46 have been amended as follows:

2. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein each of said metallic films is a single layer made of a metallic substance.

5. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein:

said connecting parts respectively comprise bonding wires, and bonding balls respectively provided to the metallic films; and

said bonding wires are bonded to said electrode pads and said bonding balls.

7. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein said resin package includes a first resin portion on which the chip is provided, and a second resin portion which covers the chip.

15. (Amended) [The] A device [as claimed in claim 14] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package, said resin projections extending downwards from the mount-side surface and laterally extending from at least one side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein each of said metallic films is a single layer made of a metallic substance.

18. (Amended) [The] A device [as claimed in claim 14] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package, said resin projections extending downwards from the mount-side surface and laterally extending from at least one side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein:

said connecting parts respectively comprise bonding wires, and bonding balls respectively provided to the metallic films; and

said bonding wires are bonded to said electrode pads and said bonding balls.

20. (Amended) [The] A device [as claimed in claim 14] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package, said resin projections extending downwards from the mount-side surface and laterally extending from at least one side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein said resin projections laterally extend from a plurality of side surfaces of said resin package.

21. (Amended) [The] A device [as claimed in claim 14] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package, said resin projections extending downwards from the mount-side surface and laterally extending from at least one side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein said resin projections laterally extend from only one side surface of said resin package.

44. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein:

said connecting members respectively comprise bumps provided between the electrode pads of the chip and the metallic films.

45. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein:

said metallic films respectively have lead portions, which are sealed by the resin package and extend toward the chip; and

said connecting parts include bumps provided between the electrode pads of the chip and the lead portions of the metallic films.

46. (Amended) [The] A device [as claimed in claim 1] comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films,

wherein:

said metallic films respectively have lead portions, which are sealed by the resin package and extend toward the chip, said lead portions having recess portions; and

said connecting parts include bumps, which are positioned in said recess portions and are provided between the electrodes pads of the chip and the lead portions of the metallic films.

ABSTRACT OF THE DISCLOSURE

B1
A device including a chip, and a resin package sealing the chip, the resin package having resin projections located on a mount-side surface of the resin package. Metallic films are respectively provided to the resin projections. Connecting parts electrically connect electrode pads of the chip and the metallic film.
